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ORIGINAL ARTICLES.

SIMPLE AND MULTIPLE PAPILLOMATA OF THE CONJUNCTIVA.

By W. H. Luedde, M.D.,
ST. LOUIS, MO.

While papillomata (warts) on the cutaneous surface of the eyelids are common, all writers agree that they are not often seen in the conjunctiva.

Usually a single tumor is situated at the inner canthus. A case of this type was under my care eleven years ago at the office of Dr. M. H. Post. Unfortunately the stained specimen is so much faded that it cannot be photographed successfully.

Frank L., colored, aged 16. New growth at inner canthus left eye for about 2 weeks. No history of injury nor previous disease. Tumor is attached by pedicle to inferior border of the caruncle. It measures approximately 3 by 5 mm. Bleeds easily on manipulation and is slightly pigmented. Simple excision under cocain solution (5 per cent.) instilled into the conjunctival sac and the use of silver nitrate solution, 1.5 per cent., locally was followed by prompt healing, without recurrence.

Very rarely papillomata occur as multiple growths scattered over both ocular and palpebral conjunctiva, a condition referred to by Axenfeld as papillomatosis. The recent observation of a case of this unusual type is the reason for this report.

Ginsburg states that, like fibromata, papillomata are less frequent in the scleral conjunctiva than in the fornix, but may grow very large and surround and cover the cornea with cauliflower masses of tumor tissue. In our case the small tumors were much scattered, involving the ocular and palpebral conjunctiva

as well as the fornix. The same author states that as the epithelial masses in the tumor are so much more abundant than the connective tissue, it may be difficult to distinguish a papilloma from the true epithelioma. The differential diagnosis must rest on the failure of these epithelial cell masses to invade the subepithelial tissues, on the absence of degenerative changes, and on the internal structures of the cells. The epithelium in papilloma of the conjunctiva usually remains of the mucous type, but it may change to an epidermal character.

FIG. 1. Showing location of the papillomata. All except No. 1 and No. 2 fail to show in the reduced picture. No 7 is in the palpebral conjunctiva of the upper lid.

Clinically, in the early stage the differentiation may be impossible between papilloma and epithelioma. In the later stage the mobility (Verschiebarkeit) is a point worthy of note in the diagnosis. For instance, with a growth at the limbus, a papilloma can be lifted up as it merely lies on the cornea, while an epithelioma infiltrates the corneal tissue.

In our case, the diagnosis was made certain by the histological examination of one of the multiple growths. The presence of several small tumor masses, having no connection with each other, of itself might lead one to assume that the process was non-malignant.

Albert M., colored, aged six years, was brought to the clinic of the St. Louis Eye, Ear, Nose and Throat Infirmary by a school nurse January 20th, 1914, on account of several growths which had appeared on the left eye during the last six months. No record of previous injury could be obtained; no pain accompanied their appearance and development; no disturbance of vision nor more than slight discomfort was noted.

The largest tumor was at the margin of the lower lid of the left eye, and projected through the palpebral fissure when the lids were closed. This mass measured about 5 mm. in its longest axis. It was not a solid tumor mass, but was made up of tiny

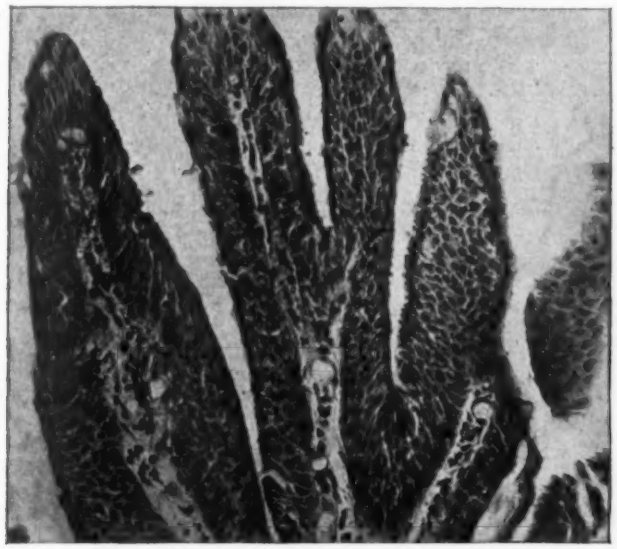


FIG. 2.

arborescent excrescences. Its base was just within the palpebral conjunctiva at the free margin of the lower lid, and was not more than 2 mm. in diameter.

Seven separate and distinct growths of the same type were present at different points in the conjunctiva of the left eye. (Fig. 1.) The other eye was entirely free from them. Both eyes seemed otherwise entirely normal. These papillomata were distributed as follows: three on the palpebral surface of the lower lid; one in the lower fornix; one in the ocular conjunctiva below the cornea; another larger one in the ocular conjunctiva just at the nasal side of the limbus, and a small one in the palpebral conjunctiva near the margin of the upper lid.

One of the small growths in the conjunctiva of the lower lid was removed the following day and examined histologically. Its appearance is shown in the micro-photograph taken by Dr. Alt. (Fig. 2.) It is a simple papilloma of the conjunctiva with almost no connective tissue and a marked hyperplasia of the epithelium, as usual in warty growths. It nowhere showed any evidence of malignancy.

The growth showed the usual goblet cells in abundance. Its mucous character was emphasized by the presence of mucin in some of these cells and by occasional masses of coagulated mucus in which a few desquamated cells were entangled lying in the interstices between the excrescences of the growth.

A few days later the other growths were removed from the palpebral and ocular conjunctiva of the left eye with surprising facility after the instillation of cocain 5 per cent., and adrenalin 1/1000. Seizing the growth with the forceps and making an incision in the conjunctiva at the base with the scissors, was usually sufficient for the total removal of each little tumor mass, except the two located in the ocular conjunctiva.

These had been flattened against the sclera by the pressure of the lids so as to necessitate some dissection under the conjunctiva to free them from the episcleral connective tissue to which they were more or less firmly attached. This was particularly evident in the tumor at the nasal side of the limbus, it being larger and more firmly attached. Their position did not indicate any direct relation from the apposition of the lids and the ocular conjunctiva.

In comparing the two cases histologically it was noted that in this second specimen the bloodvessels are quite inconspicuous. The thin central strip of connective tissue seems poorly supplied with blood. In the first case the bloodvessels seem to be engorged. There is also extravasated blood in the tissue spaces; probably due to pressure of forceps in the removal. The explanation for this difference may be furnished by the fact that in case No. 1 the tumor was removed under simple cocain solution instilled in the conjunctival sac, allowing free bleeding, while in the recent case adrenalin was freely used and there was no bleeding at the removal of the growth.

Ginsburg's statement that the proliferation of the epithelial layer is relatively less in those growths situated at the inner canthus is sustained by the findings in these two cases.

The fact that they were both colored boys is probably of no significance.

In many textbooks, stress is laid on the likelihood of a recurrence of the growth unless the actual cautery is used on the stump, after the simple surgical removal for total extirpation.

Our experience in these cases does not justify these severe measures. Only mild antiseptic solutions were used on the conjunctiva after the simple and painless surgical procedure, with a protective dressing for a few days. There was no sign of recurrence of any of the growths.

CLINICAL DEMONSTRATION OF EYE CASES.

S. D. Risley (*Penn. Med. Jour.*, January, 1914) reports two cases of chronic corneal disease which resisted all the usual methods of treatment, but cleared up very rapidly after giving the patients the dessicated thyroid gland of sheep. The first case was an Italian boy with marked photophobia, vascular cornea with a number of deeply seated isolated gray spots. He was in poor health, had clubbed finger-ends, thick, pendulous lips, markedly coated tongue. The von Pirquet test was strongly positive. Under old tuberculin injections twice weekly his eye improved rapidly but his general condition remained unimproved, in spite of proper general treatment, tonics, etc. With the administration of three grains of dessicated thyroid, three times daily, his general condition began to improve rapidly and the eye soon cleared up leaving only the faint gray nebulæ at the site of the former tubercular deposits.

The second case was one with vascular keratitis and recurring superficial ulcers near the corneal limbus. The von Pirquet was negative in her case. The general appearance suggesting myxedema she was given the dessicated thyroid in small doses, which resulted in a rapid subsidence of the corneal disease and much improvement in her general health. Risley emphasizes the importance of the thyroid secretion over the general nutrition and the value of thyroid substance given to cases of hypothyroidism suffering with chronic corneal lesions.

A CASE OF GLAUCOMA CAUSED BY TUBERCULOUS SCLERITIS WITH KERATITIS AND RELIEVED BY TREATMENT WITH TUBERCULIN.*

By J. W. Charles, M.D.,

ST. LOUIS, MO.

On July 14th, 1913, Mrs. W., 47 years old, came to me for the purpose of having the left eye enucleated because she was tired of all endeavors to save it, and the pain in it at times was intense. Her unusual intelligence influenced me to ask her for a written account of her experiences, which I believe are of sufficient interest to incorporate in this report.

"I was a delicate child from birth. When about two years old I began to have very painful discharging ulcers in the ears. These continued off and on for eight or ten years. Then the tonsils were taken out.

"From about thirteen years of age up to twenty, I had long and severe attacks of laryngitis and bronchitis with loss of voice, and a cough for months at a time.

"At about twenty, the first eye trouble came, an ulcer on the cornea with episcleritis. I had several attacks of this within two or three years. A deformity of the wrists began at about the age of 22. Between 22 and 24, some pulmonary trouble developed which was benefited in the California climate. Then came a recurrence of the eye trouble, and mercury and iodide of potash were given me internally. By continuing the use of the iodide of potash off and on, the eye kept well for about seven or eight years, during which period there was much rheumatism, enlarged glands in the neck, indigestion, constipation, etc.; finally a collapse with neurasthenia, followed in a year by a return of the old eye trouble, an attack which lasted six months. Mercury and iodide of potash were given me for a couple of months, then compound syrup of trifolium, which latter I took off and on for eleven years. During these years my digestion gradually grew worse until I could eat nothing but shredded wheat biscuit and milk.

"Then came another attack of the eye of the old nature, which was always very complicated. It began in August, 1911. The

*Read at the meeting of the St. Louis Ophthalmological Society, February 23, 1914.

last of May, Dr. — performed an iridectomy for acute glaucoma. In three weeks he did an anterior sclerotomy; then in ten days another iridectomy. The inflammation did not subside since that time.

"When 25 years old, adenoids were removed and an obstruction taken from the nose."

In 1900 a well-known ophthalmologist of New York saw the case and he has very kindly written me the following notes:

"In reply to yours of the 15th, I first treated Mrs. W. in 1900 for a sclero-keratitis, left eye. After several months treatment with inunctions, KI, and tonics she made a complete recovery and vision 20/30 with cylindric correction. I saw her again in September, 1912, and at that time she had a recurrence of the kerato-scleritis and marked ectasia of the sclera at the corneo-scleral margin. The tension was 60 mm. with the Schiötz tonometer. B.P. 150 mm., Wassermann and tuberculin tests negative. I performed two iridectomies, downward and inward, selecting that portion of the corneo-scleral margin to make my incison on account of the thinning of the sclera in the other portions.

"I have always considered Mrs. W.'s trouble was due to hereditary lues and she responded to the treatment, although I have thought it looked very much as if there might be a tubercular element.".

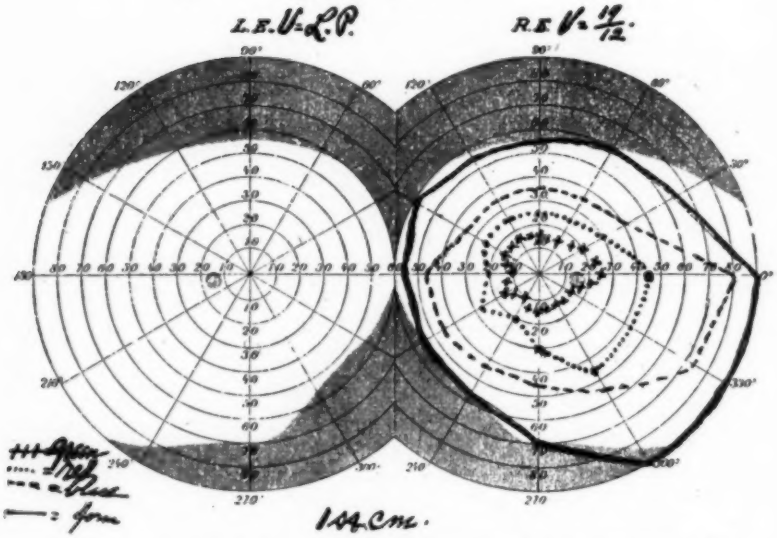
The patient ceased menstruating before forty with no untoward symptoms. She was quite slender, with a nervous anxious face, and appeared rather anæmic. She suffers from chronic constipation. Systolic blood-pressure =170 (Janeway) sitting up. The right eye seemed normal with the exception of a narrowing of the fields for color. O.D. V.=19/12; O.S. V.=L.P. (with hesitation).

In the left eye there was an exacerbation of an old anterior scleritis with keratitis, posterior punctations on the membrane of Descemet, pigment specks on the lens-capsule, distinct hyalitis. The optic disc rather pale, very little cupping. Ophthalmometer gave O.D. As 0; O.S. too irregular to measure. Schiötz tonometer gave O.D. T.=28 mm.; O.S. T.=37 mm.

Eserin sulph. 2/480 was used in the left eye and pilocarp. mur. 2/480 t.i.d prescribed.

July 15th.—Vide visual fields. The patient shows distance of glasses O.D. +0.5 cyl. ax. horl.; O.S. +2. cyl. ax. 105°⊃+1. Sp.

July 15, 1913.



She was immediately referred to Dr. Rudolph Buhman for a complete laboratory examination. His report follows:

"Wassermann negative, v. Pirquet very positive; urine-specific gravity 1020, acid, amber, albumin trace, sugar negative, indican increased, uric acid, leucocytes, bacteria, epithelial cells, a few hyaline and finely granular casts."

The patient was then referred to Dr. Horace Soper who found:

"July 25th—Patient fairly well nourished, sallow complexion, weight 97½ lbs., height 5 ft. 4 in. Dorsal surface of the right wrist has a swelling which appears to be the result of a synovitis,

"The heart is enlarged one-half inch beyond the mammillary line. Sounds clear. Pulmonic somewhat accentuated. Blood-pressure 130 Faught. Abdomen somewhat narrow, epigastric angle, fairly good muscular, moderate amount of subcutaneous fat.

"The sigmoid is very strongly contracted. Stomach motility good. Test breakfast: 15 cc., chyme fairly good. Moderate excess of stomach mucus. Free HCl. 14, total acidity 18, no lactic acid, no pus, no blood.

"Fæces examination: yellow color, no early gas in jar, quantity 75 grms., consistence soft and mushy, no excess of mucus and no occult blood, no parasites, no pus, no connective tissue. Moderate amount of vegetable residue, and no muscle fibres.

"Urine analysis: 24 hours quantity 2050 cc. Sp. gr. 1010, no albumin, no casts, no sugar, no indican, many cylindroids and many epithelial cells, no pus, no red blood cells.

"Blood: Hæmoglobin: 72 per cent. smear showed red cells fairly well-filled, equal in size, no leucocytosis.

"Diagnosis: Cardiac hypertrophy, moderate grade of sub-acid gastritis, chronic spastic constipation, neurasthenia.

"Fruit juices added to her diet which is shredded wheat biscuit and milk."

July 23rd.—The patient has been seen daily and expresses herself as much more comfortable. O.D. V.=19/15, T=37 mm.; O.S. V.=19/120, T=44 mm.

July 28th.—Ophthalmometer gives O.D. As 0.5 M vertl.; O.S. As 1.75 M 135°. Trial yields O.D. Ah 0.5 M vertl. Hm 0.5 V.= 19/15; O.S. Ah 1.75 M 150° Hm 1. V.=19/38. This correction was prescribed.

Systolic blood-pressure was 132 mm., which led me to believe that her 170 mm. of the 14th was caused largely by a nervous spasm of arterioles rather than by an organic change. Tonometer gives O.D. T=31 mm.; O.S. T=40 mm.

On the 29th, the pupil O.D. became small from the pilocarpine.

July 31st.—Prescribed a teaspoonful of calcium lactate t.i.d.

August 1st.—The patient still sees clouds before O.S. With glasses, O.D. V.=19/15; O.S. V.=19/30. In the afternoon she was given old tuberculin 3.0 mg. "Marked local, general and focal reaction" was reported by Dr. Taussig, who gave the injection. (See his report later on.)

The focal reaction or ocular exacerbation on August 2nd was accompanied by a greatly increased turbidity of the aqueous humor, and she complains of seeing an increase in the clouds. O.D. T=24 mm.; O.S. V.=19/48.

August 3rd.—O.D. V.=19/15, T=24 mm.; O.S. =19/48, T=32 mm.; *i.e.*, the vision of O.S. was diminished at the same time that the intraocular pressure was diminished, and therefore the patient was told that it was possible that her loss of sight did not depend entirely upon her glaucoma but upon its cause. However, she was given eserine sulphate 2/480 four times daily in the left eye and pilocarpine 2/480 in the right eye.

August 5th.—O.D. V.=19/15, T=25.5 mm.; O.S. V.=19/48, T=32 m.m.

Dr. Hardy then took charge of the case during my vacation.

August 8th.—The patient left the hospital this morning.

August 9th.—O.D. V.=19/15, T=25 mm.; O.S. V.=19/38, T=31 mm. The eye is quiet, vitreous body clear.

August 15th.—O.D. T=25 mm.; O.S. T=31 mm.

August 21st.—O.D. T=23 mm.; O.S. T=28 mm.

August 27th.—O.D. T=24 mm.; O.S. T=31 mm.

September 7th.—O.D. V.=19/19+, T=30 mm.; O.S. V.=19/30, T=28 mm. The patient has seen no cloud for five days.

During all of this time and that following, the clouding complained of by the patient seemed to be the expression of a mild focal reaction, *i.e.*, while the vision was otherwise steadily improving without a diminution in tension, still there were days when the aqueous and the vitreous were sufficiently turbid on the day following the AF injection to warrant the assumption.

Upon my return, September 15, I was gratified to find O.D. V.=19/19; O.S. V.=19/24; and on the 19th O.D. T=20 mm.; O.S. T=18 mm. On the day before, Dr. Taussig had increased the dose until it was 0.2 mg. AF causing "a slight cloud."

September 23rd.—"AF 0.4 mg., no reaction"; but on the day following the patient complained of "a slight cloud."

September 26th.—O.D. V.=19/19; O.S. V.=19/24.

Since the patient was now planning to go home as soon as possible, Dr. Taussig gave her, October 4th, 1.2 mg. with marked general, local and focal reactions, and the eye became as "blind as a bat" on the following morning. However, the fact that when she reached my office, in the afternoon, her vision was O.D. 19/19; O.S. 19/24; T=27 mm., would indicate either a nervous manifestation or a very rapid absorption of exudate.

October 11th.—AF 1. mg., slight local, general (100.2) and focal reaction.

October 17th.—AF 1 mg., slight local, general (100.4) and focal reaction. The eye has been paining since the last injection. There is a well-defined phlyctænular conjunctivitis at the lower corneal limbus—certainly not an anaphylaxis from albumin in the tuberculin because this was albumose free.

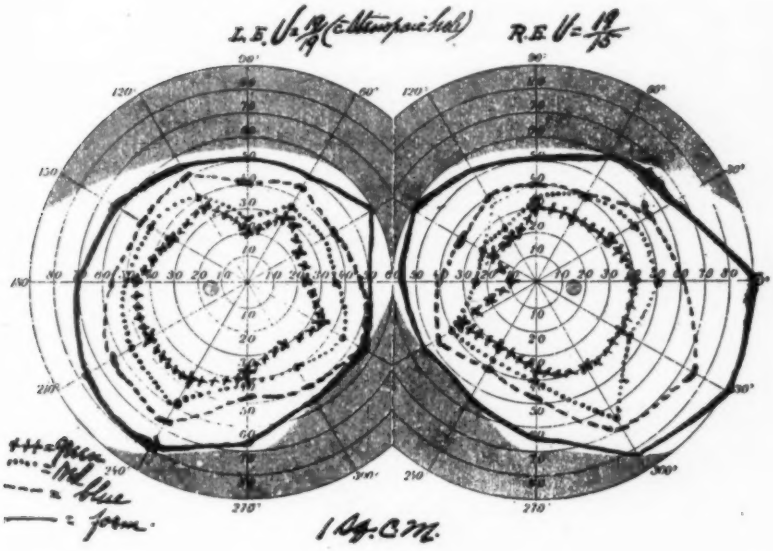
October 18th.—O.D. V.=19/15; O.S. with stenopæic hole, V.=19/19. The eye is perfectly quiet.

October 24th.—AF 1.0 mg., slight general reaction (99.8).

October 27th—Vid. fields.

October 29th.—Cocaine and adrenaline have been used for two weeks because eserine was causing discomfort and I wished to be sure of the tolerance of the eye for mydriatics. To-day for

October 27, 1913.



the first time atropin 1 per cent. and cocain 4 per cent. were used without causing any discomfort.

October 30th.—O.D. T=23 mm.; O.S. T=18.7 mm. Used atrop. and coc. in O.S. The eye feels perfectly well.

October 31st.—The patient goes home apparently well.

Dr. Taussig's account of the tuberculine injections:

DIAGNOSTIC INJECTIONS.

July 28th, 1913—0.2 mg. old tuberculine. No reaction.

July 30th, 1913.—1.0 mg. old tuberculine. No reaction.

August 1st, 1913.—3.0 mg. old tuberculine. Marked local general and focal reaction showing on the second following day.

THERAPEUTIC INJECTIONS.

August 13th.—AF 0.002 mg. No reaction.

August 16th.—AF 0.004 mg. No reaction.

August 19th.—AF 0.01 mg. No reaction.

August 22nd.—AF 0.02 mg. No reaction.

August 25th.—AF 0.03 mg. No reaction.

August 29th.—AF 0.06 mg. No reaction.

September 3rd.—AF 0.1 mg. Local and general but no focal (ocular) reaction.

September 8th.—AF 0.1 mg. No reaction.

September 13th.—AF 0.15 mg. No reaction. Weight 100 lbs.

September 18th.—AF 0.2 mg. No reaction.

September 23rd.—AF 0.4 mg. No reaction.

September 29th.—AF 0.7 mg. No reaction.

October 4th.—AF 1.2 mg. Marked local, general (102.4) and focal reactions. Weight 102 lbs.

October 11th.—AF 1. mg. Slight local, general (100.2) and focal reactions.

October 17th.—AF 1. mg. Slight local, general (100.4) and focal reactions.

October 24th.—AG 1. mg. Slight general reaction (99.8).

Note.—"AF"=Albumose-free old Koch tuberculin (Hoechst).

After the patient returned home, Dr. Taussig received a note from her family physician reporting a temperature of 103° following each of the three subsequent injections. He wrote December 1st advising the discontinuance of all injections for two weeks, since which time we have not heard from him.

Since going to press, a note has arrived in which the patient says that the eye is perfectly quiet.

CASE OF ATROPHY OF OPTIC NERVE AFTER PERTUSSUS.

E. Roedelius (*Archiv. für Kinderheilkunde,* LXII, Nos. 3 and 4) reports the case of a child who died from intercurrent diphtheria a few weeks after recovering from whooping-cough. It had become entirely blind and all other causes except the strain from the coughing and the toxic action of the pertussus could apparently be excluded. Although the cerebrospinal fluid was limpid and not under high pressure when the child was examined during the attack of diphtheria, yet post-mortem examination revealed an abnormal space between the optic nerve and its sheath. The author could find only six similar cases on record. One child recovered spontaneously, and another after lumber puncture. A women of 40 developed bilateral papillitis with retinal hæmorrhages, in connection with protracted whooping-cough, but the condition later improved.

TRANSLATIONS.

ON HÆMORRHAGES INTO THE RETINA ACCOMPANYING MILIARY TUBERCULOSIS.*

By Prof. Dr. W. Shock,

JENA, GERMANY.

(Translated by A. Alt, M.D.)

Axenfeld, as the first, reported at the International Congress at Naples, 1909, and in the Société Belge d'Ophtalmologie,† 1910, (from observations made together with me) that certain forms of retinal hæmorrhages are probably based on a tubercular disease of the retina. He then described cases, in which, aside from the hæmorrhages, small whitish constrictions were visible in the veins. In these cases it was perfectly certain that there was a local disease of the retinal bloodvessels, whether due to the tubercle bacillus or its toxins. We concluded: "There is a hæmorrhagic form of bulbus tuberculosis."

Since then a number of papers have appeared in literature which dealt with the same problems and completed and affirmed our findings. There occurs evidently a tubercular affection of the retina itself more frequently than we had hitherto assumed. I mention the papers by Igersheimer,[1] Coeds,[2] A. Knapp,[3] Gilbert;[4] here the whole literature on this subject is brought together.

In all of these cases, however, we had to deal with cases in some of which a sometimes serious tuberculosis was present in some other part of the body, in some the general condition was relatively good in spite of the manifest tuberculosis.

The authors unanimously agree that hæmorrhages had occurred in the eye due to a local affection of the bloodvessels from the local action of the tubercle bacilli or their toxins.

A. Knapp details clinically similar changes in the retina, the ætiology of which is, however, not proven, and Gilbert has found that in eyes suffering from chronic uveitis the retinal bloodvessels may suffer from periphlebitis, which can sometimes go on to obliteration of the vessels.

*Klin. Mtsbl. f. Augenhlk., January, 1914.

†Axenfeld and Stock, Klin. Mtsbl. f. Augenhlk., 1909, XLII, I., p. 461, and 1911, I., p. 28.

It is, however, not such an observation which I want to report here; the case, which I had occasion to see and in which there were retinal hæmorrhages, is of a quite different kind.

A miner, 37 years old, had entered the medical clinic of Geh. Rath Stintzing on account of continued pains in the small of the back, the arms and legs.

The internal examination revealed nothing which could help in arriving at a diagnosis. A few days later râles appeared in the lungs. Old tuberculin, 0.2 mg., produced a decided reaction. A week later a fever appeared, which gradually grew higher. Since miliary tuberculosis was suspected, I was asked to examine the fundus.

I found hæmorrhages in both retinæ. A minute examination, however, failed to reveal any changes in the bloodvessels; three days later the same condition, although the hæmorrhages were somewhat larger.

My diagnosis was so-called septic retinal hæmorrhages due to a general infection with pus producing microbes.

The culture plates which were immediately made, however, remained sterile and the examination of the blood for tubercle bacilli was negative.

I could not come to the diagnosis of pure miliary tuberculosis since the hæmorrhages in the fundus did not at all fit into the picture.

On the day of his death the patient was examined three times with the ophthalmoscope, and now three miliary tubercles were found in the choroid of the left eye.

The post-mortem made very carefully by Prof. Dr. Roessle showed that there was a pure miliary tuberculosis and that there was no trace of a general pus microbe infection.

The diagnosis was: General miliary tuberculosis with considerable tuberculous calcification of the thoracic lymph glands. Beginning desquamative pneumonia. Fresh hyperæmic swelling of the spleen. Chronic pericholecystitis. Cholecystitis. Stone in the fundus of the gallbladder and closure of the ductus cysticus. Hæmorrhagic erosions in the duodenum.

We received the eyeballs immediately after the obduction, cut them into series and stained them (Dr. Wittich undertook this laborious work).

We wanted to find especially: (1) Whether there were tubercle bacilli in the retina; (2) whether there were any pathological changes in the retinal bloodvessels, especially any thickening of

their wall (Klebs); and (3) whether tubercle bacilli could be shown in the miliary tubercles of the choroid.

HISTOLOGICAL EXAMINATION.

Right Eye.—Typical elongated eye (myopia), 25.5 mm. Cornea, iris, ciliary body, choroid, absolutely normal. Nowhere any signs of inflammation. At the papilla the nerve fibres are drawn toward the temporal side (myopic alteration). The retina is well preserved. Next to the papilla red blood corpuscles are seen in the tissue. The hæmorrhages lie especially in the nerve fibre and ganglion cell layers; in some places the blood has penetrated through all the layers of the retina to the rods and cones.

There is nowhere an inflammation in the retina, nowhere aggregations of leukocytes or lymphocytes.

One bloodvessel from which such a hæmorrhage has taken place can be followed through the series. There is no thickening of the walls, but in one place the endothelium is wanting. Here the wall is less dense and there are all over red blood cells lying between the connective tissue and muscle cells. This is undoubtedly the place where the blood has left the bloodvessel.

Left Eye.—This eye is, also, typically elongated (24 mm.). The myopic dislocation at the papilla is not as plain as in the right eye.

Cornea, iris and corpus ciliare normal. In the choroid near the posterior pole there are three typical circumscribed miliary tubercles. In their cheesy parts numerous tubercle bacilli are found.

Retinal hæmorrhages lie between papilla and macula. It is not as easy as in the right eye to find a bloodvessel from which the blood came. In the locality of the hæmorrhages which penetrate through all the layers of the retina into the rods and cones there are a few very fine blood vessels which appear obliterated. The media seems thicker than normal, so that the obliteration of the lumen must probably be ascribed to this thickening. There are no signs of inflammation in the retina.

While the tubercle bacilli were easily found in the miliary tubercles of the choroid, none were found in the retina in spite of of the most diligent and prolonged search for them.

Since in this case no other germs could be found (no pus germs) the hæmorrhages into the retina were certainly solely due to the miliary tuberculosis.

The hæmorrhages are independent of the miliary tubercles in the choroid. In the right eye no such tubercles were found clinically or at the microscopical examination and in the left eye the hæmorrhages lie far from the miliary tubercles.

Neither are the hæmorrhages locally produced by tubercle bacilli, which were situated in the retina; they are purely a pathological change based on a general intoxication produced by the miliary spreading of the tuberculosis.

Already in 1907 Klebs had shown that when tuberculosis breaks through into a bloodvessel and thus enters the circulation, sometimes hæmorrhages from the lungs appear at a very early date. He ascribes this to an angiotoxin produced by the tubercle bacilli, which induces an enormous thickening of the walls of the arteries in the lungs. This contraction of the arteries leads to hæmorrhages in the same arterial area, just as in embolic obliteration of the arteries.

In our cases the hæmorrhages cannot have originated in this way. I have examined the patient repeatedly with the ophthalmoscope and found no signs of an obliteration of bloodvessels; no obliterated arteries or arteries with thickened walls were clinically discernible. Whether the small artery which seems to have a thickened wall, can be used in such an explanation, I doubt very much, This may even be explained simply by an oblique section which might make the wall appear thicker than normal.

In the right eyeball, in which the hæmorrhages were larger and more numerous, the cause can be found directly. The endothelia of a bloodvessel have disappeared, the wall is diseased, and the blood cells could simply wander through it.

In this case, therefore, the tubercle bacilli must have formed angiotoxins which led to an alteration in the bloodvessel wall, but this alteration was primarily the direct destruction of the endothelia.

We cannot assume that the patient previously suffered from a disease of the bloodvessels, he was young (37 years) and had never previously been seriously ill.

Thus I must conclude that the tuberculosis alone was responsible for these hæmorrhages.

I have for a long time been of the opinion that the action of tuberculosis on the organism must be varying, or that there are different strains of tubercle bacilli.

It has not yet been found whether some of these strains produce especially much of or an especially virulent angiotoxin, and should be inquired into. I am sorry that I failed to make cultures of the tubercle bacilli in this case.

I consider this observation as one of great clinical interest, particularly since, with hæmorrhages in the retina during a severe general infection, we believed we had always to diagnose them as due to pus organisms. This case proves that a general tubercular infection, also, may give rise to hæmorrhages into the retina.

LITERATURE.

1. Igersheimer. Tuberculose als Aetiologie der Periphlebitis retinalis adolescentium. Graefe's Arch., 1912, LXXXII, p. 213.
2. Cords. Zur Kenntniss juveniler Netzhautgefæsserkrankung. Zeitschr. f. Augenhlk., 1911, XXVI, p. 441 and 508.
3. Knapp, A. Ueber Netzhautveränderungen des Juenglingsalters. Arch. f. Augenhlk., 1913, LXXIV, p. 105.
4. Gilbert, W. Ueber juvenile Gefaesserkrankungen des Auges. Arch. f. Augenhlk., 1913, LXXV, p. 1.

PARALYSIS OF THE SIXTH NERVE ASSOCIATED WITH BILATERAL DEAFNESS AFTER RACHISTOVAINISATION.*

By F. Terrien and P. Prelat.

(Translated by Adolf Alt, M.D.)

In spite of certain practical advantages of rachianæsthesia, this method does not seem to have become as generally applied as one might have expected. The reason for this must doubtlessly be sought in the fact that the effect is not always reached without grave inconveniences, as revealed by numerous observations. In fact various accidents have been reported after rachianæsthesia, some fatal, the greater number transitory and leaving no trace behind. Very frequent are headaches, vomiting and bladder troubles, consisting, according to the individual, in incontinence or retention of the urine. More rarely we find diverse paralyses, paraplegia, paralysis of the muscles of the

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shoulder (Le Dentu), of the sphincters (Rochard), or of the neck (Reynier). In one case, followed up by Laignel-Lavastine and cited by Reynier, one month after rachistovainisation, a complete paralysis of all four extremities was observed, which, however, got well in two weeks. Even the cranial nerves were implicated, and Sonnenburg has reported two cases with paralyses of the facial and the hypoglossus. These are exceptional cases. On the other hand, paralyses of the eye, especially localized in the sixth pair, have been seen in several cases. In an article published in 1907 in the *Annales d'Oculistique* with a case of their own, Blanluet and Caron could gather six analogue observations. To these we can add seven new cases: 1 by Ricchi, 3 by Sonnenburg, 1 by Rochard, 1 by Bartrina and 1 of our own, which we here report. We may, also, mention a case of Chaput's, in which after rachistovainisation a transitory paralysis of the sixth pair occurred; but this patient was syphilitic, and consequently the origin of this paralysis is doubtful.

L. Pierre, 63 years old, came on July 7th, 1913, to the eye department of the hospital Beaujon, because for several days he "squinted and saw double."

He related that a month previously he had been operated on in this hospital under spinal anæsthesia for an inguinal hernia. We found that the anæsthesia was obtained by rachistovainisation after the injection of three-fourths of a cubic centimeter of a solution containing 1/10 gr. of stovain (Billon). He, therefore, received 0.075 gramm of the drug. The healing was normal and the patient left the hospital perfectly cured of his hernia.

But two weeks later, apparently in perfect health, he suddenly was taken with a violent headache and almost at the same time his vision was disturbed. He then noticed that he saw double and that his eyes were deviated. A few days later his hearing diminished considerably on both sides, and now the deafness of the right ear is complete, while the left still hears the watch on contact.

When examined by us the inward deviation of the right eye was manifest, and when trying to have him turn this eye outwardly the limitation of the muscular excursion in that direction was very definite and was combined with nystagmic movements with great oscillations. The pupillary reflexes and the fundus were normal.

The functional examination revealed a right homonymous diplopia. On this side the field of fixation was reduced to 35°.

The visual field and the visual acuity (after correction of a slight myopia) were normal in both eyes.

The general examination was absolutely negative. No sugar or albumen were found in the urine; Wassermann negative. In his previous history he mentioned an attack of typhoid fever when he was 32 years old, which lasted 40 days. No specific antecedents.

When we examined the patient again on January 24th, 1914, he was perfectly cured; the diplopia had disappeared, the field of fixation was normal in all directions, there was no trace left of his deafness. This cure was effected by two months of electric treatment given at the fondation Rothschild.

The cause of the ocular paralysis observed in this patient is plain; nothing but the rachistovainisation, made two weeks previously can have produced it. It has, also, all the characteristics usually mentioned in such observations.

Such paralyses, most frequently unilateral, attack almost always the sixth pair; only one observation, published by Loeser, in which the left superior oblique was concerned, makes an exception from this rule. They commonly come on late, in contrast with the accidents of general intoxication, which come on very rapidly after the injection of the drug. In most cases they have appeared in the course of the second week.

Their manner of evolution is equally characteristic. In fact, these paralyses heal in a short time and the cure is permanent. This was the case with our patient, too, whose diplopia disappeared after two months of treatment. The field of excursion of the paralyzed muscle has been completely restored. This is, however, not absolutely the rule, and the paralysis may persist in some cases for a much longer time. In the case observed by Vossius, the diplopia was still in existence at the end of 6 months. This is, however, exceptional.

It is, also, interesting that the different anæsthetics in use do not cause these ocular complications with the same frequency. In this regard stovain and novocain are strangely damaging; although their toxicity is much less than that of cocain; these were the drugs injected in most of the cases which we mentioned above.

All the characteristics and particulars of the ocular palsies following rachianæsthesia were reproduced in our case. What gives it an especial interest is the coexistence of the ocular paralysis with an almost total deafness, an association of which

we have not been able to find any other examples in literature. This deafness, however, presented the same characteristics as the paralysis of the right external rectus, except that it was bilateral. The two affections appeared at the same time, developed parallel with each other, and ended in a complete cure, having lasted about the same time. This paralysis of the acusticus resulted probably from the same lesion as did the ocular paralysis.

The pathogenesis of these paralyses of the right externus is still very obscure. Different hypotheses have been put forward without one single one having furnished sufficiently strong arguments to exclude the others. Some think they are simply transitory hysterical conditions; others (Salmonsohn) think they are produced by nuclear hæmorrhages affecting totally or in part the bulbar centres of the sixth pair from the injection due to momentary hypertension. This hypothesis does not remain free from certain objections. If it were correct, the paralysis should develop rapidly, because the injected fluid is quickly absorbed and the hypertension which it produces is in consequence only transitory; furthermore, the paralysis would last much longer and would often persist.

Péchin believes in a labyrinthic oculomotor affection due to the presence of stovain in the cerebrospinal fluid which bathes the ampullæ.

Without absolutely rejecting these different interpretations, it seems to us more correct to attach these paralyses to a meningeal reaction, as shown, clinically, by an often obstinate headache preceding these affections, as in our patient; or, objectively, by the lymphocytosis found in the cerebrospinal fluid, though this is inconstant.

This reaction has been much discussed, yet observations of true meningitis after rachianæsthesia have been published. Reclus has reported to the surgical society the observation of a patient who after the injection of two hundredths of a gramm of cocain presented a complete meningitic syndrome: headache, repeated vomiting for several days, constipation, photophobia, stiffness of the muscles of the neck and back, Kernig and slow pulse. These lasted for thirteen days and left no trace behind.

During the course of this process exudations may take place, ensheathing the trunk of the externus, which thus participates in the meningitic reaction. These exudations are quickly enough absorbed to free the nerve before definite lesions are formed and to permit of a restitution of the normal function.

The nature and cause of this meningitis is toxic, or may, perhaps, result from an attenuated infection due to a fault in the technique. These two views are defended equally well.

In fact, it seems but logic to admit that the injected substance through diffusion in the cerebrospinal fluid irritates the meninges and causes indirectly these paralyses. This is the opinion of Guinard. According to him, every injection of a cocain solution into the cerebrospinal fluid produces a defensive movement, more or less intense, on the part of the pia mater, which protects the nerve centres by this movement; this shows itself by a rain of polynuclear leukocytes and lymphocytes and even by a fibrinous exudation when the reaction is more intense. There is then a real meningitis, aseptic it is true, and causing in the great majority of cases no clinical manifestation, yet, in spite of this, histologically true and healing in about two weeks. Following the researches of Ravant and Aubourg, Guinard attributes this reaction not to the puncture itself, which is aseptic, but to the cryoscopic difference between the injected fluid and the cerebrospinal fluid.

Other authors assign this meningitic reaction not to toxic accidents, but to lesions of an infectious origin, the result of insufficient asepsis. According to Bartrina, the cause of this infection is very frequently the presence in the lumen of the needle of cells from the superficial layers of the skin carrying microbes, which thus enter the spinal canal. Yet, the culture of the cerebrospinal fluid, which was made several times, especially by Morax in Chaput's case, has always remained negative.

Of all hypotheses put forth to explain these ocular paralyses, the most seducing, the one which seems to agree best with the facts, is doubtlessly that of a meningitic reaction of an infective or toxic origin. Whatever is the effective cause of these lesions, it attacks in a special manner and usually exclusively the abducens nerve. Still, our observation shows that this noxious action may manifest itself occasionally in other cranial nerves, especially the eighth nerve, the lesions of which are probably the same as those of the sixth nerve.

LITERATURE.

J. M. Bartrina. Presse médic., 1014, p. 15.
Blanluet and Caron. Annales d'ocul., 1907, p. 62.
Chaput. Presse médic., 1908, p. 73.
Chaput. Presse médic., 1907, Nov. 20th

Curt Adam. Muench. med. Woch., 1908, No. 8.
Feilchenfeld. Centrlbl. f. p. Augenhlk., 1906, p. 118.
Jonnesco. Presse médic., 1909, p. 721.
Kendirdjy and Burgaud. Presse médic., 1905, No. 43.
Kendirdjy and Burgaud. Presse médic., 1904, No. 83.
Kendirdjy. Thèse de Paris, 1901-2.
H. Lang. Deutsche Med. Wochenschr., 1906, p. 1412.
Loeser. Deutsche Med. Wochenschr., 1906, p. 482.
Muehsam. Deutsche Med. Wochenschr., 1906, p. 1411.
Schoeler. Berl. ophth. Gesellsch., 15, II, 1906.
Société de Chirurgie, 1908, March 4th, April 8th, and May 3d, 1908.
Sonnenburg. XXI Congr. français de Chirurg., Paris, Oct., 1908.
Vossius. Med. Gesellsch. Giessen., June, 1906.

TREATMENT OF DISEASES OF THE LACRIMAL PASSAGES, WITH ESPECIAL REFERENCE TO INVETERATE FORMS.

H. Kuhnt (*Zeitschrift für Augenheilkunde,* November, 1913) believes that the lacrimal sac should be extirpated in those cases where a tuberculous or lupus dacryocystitis is present with ozæna, when there are polypoid changes present in its mucous membrane, if the sac is atrophic, as in old trachoma, whenever there are marked changes in the adjacent bones, and when an operation is to be performed in which the eyeball is to be opened. The window resection of the duct into the middle meatus of the nose is recommended when a firm or bony stricture is present at the nasal opening and the canaliculi, sac, and canal are free from morbid changes. It may be permissible to open the sac from the antrum of Highmore if the latter is diseased. In other obstinate stenoses and diseases of the lacrimal sac, when one punctum and canaliculus is normal, Toto's dacryocystotomy is indicated.

MEDICAL SOCIETIES

PHILADELPHIA POLYCLINIC OPHTHALMIC SOCIETY.

January 8, 1914.

In summing up the *Indications for the Use of Cold and Heat in Ophthalmic Practice,* Dr. Luther C. Peter pointed out that cold is a depressant; it retards the circulation, delays cell activity, is analgesic, and to some extent bactericidal. Heat is a stimulant; it quickens the circulation, renders cell life more active, is a sedative, and in high temperature is analgesic and of some bactericidal value.

As to the method of application, water furnishes the ideal medium through which heat and cold may be applied. Textbooks refer to their application in the form of coils, the Japanese "hot-box", hot water bag, electricity, etc. There are few conditions, however, if any, which do not admit of moist heat; and the student in ophthalmology will do well to restrict applications to water.

DISCUSSION.

Dr. Zentmayer said that he had hoped to hear from Dr. Peter how much the temperature of the conjunctival cul-de-sac can be altered by the application of compresses to the lid. Dr. Peter explained the relief from pain obtained from the use of cold compresses to the analgesic effect of the cold on the peripheral nerve filaments. While this may be the true explanation, he was of the opinion that it was more likely to be due to the relief of the congestion. While moist heat fulfills the requirements best in inflammatory conditions, the application of dry heat by means of the Japanese box serves better when you wish to keep up the vitality of a graft. It maintains for a long time a steady slight elevation of temperature. Dry heat is occasionally found more soothing than moist in iritis. An application of cold water, which is said to be as efficient as it is heroic, is the dousing of the head in cold water to relieve the intense blepharospasm met with in phylctænular disease of childhood. In indulgent central corneal ulcer of childhood, in which the pupil fails to dilate under atropin, stimulation of the ulcer and absorption of the

cycloplegic can be secured by holding the pipette containing the solution over a lamp until it begins to boil and then dropping the solution upon the ulcer.

Dr. Appleman called attention to a point mentioned by Dr. Peter, namely, of slightly warming the drops before using. It is not enough to give a prescription and tell the patient to wash the eye, or drop the medicine into the eye at stated intervals. They should be told to warm the solution before using, as, even at room temperature, a drop of solution allowed to fall on the eye from a short distance above it feels very uncomfortable, the more so if the solution has been chilled, in cold weather, in the journey home or from the drug store. The patients should also be told how to hold the head, how to open the lids, whether to use an eye cup or a dropper for collyria; especially in treating children should the parents be told in minute detail how to carry on the treatment at home. Care in these minute details tends to create the impression in the minds of patients that the physician is careful, interested in, and alive to overcoming the difficulties of the case.

Dr. Reber: The question as to whether hot or cold applications are to be used in a given case has always been a matter of great contention. The general principles underlying the use of both hot and cold have been most beautifully laid down by Dr. Peter, but as usual there are exceptions. For instance, most authorities prefer the use of cold applications in the early stages of conjunctivitis and inflammatory lid troubles, and hot applications in all other external diseases. In iritic disturbances it is the almost invariable rule to use hot applications, and yet there is an occasional case that seems to get more relief from cold applications. Similiarly, here and there will be found an authoritative worker who prefers almost constant hot applications in ophthalmia-neonatorum, notably, Dr. Myles Standish, of Boston.

In all traumatisms about the eye I am devoted to ice with atropia and argyrol combined with a course of calomel internally. I believe that if this were generally laid down as the proper treatment in all traumata many eyes would be saved. I think we are also apt to overlook the fact that any surgical operation is also a trauma. That in extensive intraocular operations this very same treatment should be of great value. Dr. Zentmayer's suggestion of a drop of almost boiling hot atropin solution directly upon the corneal ulcer appeals to me strongly and I shall use it at the first opportunity. Hot normal saline

solution in a very fine stream has been used by someone as a curette for corneal ulcers. I have forgotten just who it was, but I can endorse it as a most efficient method.

Dr. Leighton F. Appleman said that interstitial keratitis occurs most frequently between the ages of 5 and 20 years, in the majority of instances as a result of hereditary syphilis; according to some observers in from 50 to 80 per cent. of the cases. Acquired syphilis is considered the cause in from 2 to 10 per cent., and next to syphilis, tuberculosis in about 10 per cent. of the cases. Still others are ascribed to various diseases in which abnormal nutritional changes are manifestly predominant.

In most cases the sight is so seriously impaired that the patient can barely count fingers, or, in others see the movements of the hand before the eye. As a rule both the eyes are not affected at the same time although the second eye is ultimately involved, it may be after an interval of several weeks, months or years. Of this the patient should be warned.

The treatment for this condition is: first, local, which consists in the use of atropin to maintain mydriasis. After the local irritation has subsided, and when absorption is going on, the process may be hastened by one of the following means: first, by the use of dionin in 5 or 10 per cent. solution, instilled 2 or 3 times a day, which acts by increasing the lymphatic activity; second, by the use of subconjunctival injections of from 5 to 10 minims of normal saline solution, repeating them after the resulting irritation has disappeared; third, by the use of mercurial oxide ointment applied or introduced into the cul-de-sac and followed by massage of the cornea through the closed lids. Salvarsan is also used by some in cases of syphilitic origin, with gratifying results.

Dr. Zentmayer said that in the prognosis of interstitial keratitis we must not forget that disseminated choroiditis is very often associated with the corneal conditions. In fact, there is usually associated a uveitis. While suppuration is very rare in interstitial keratitis the cornea sometimes undergoes softening with a resulting staphyloma. I believe that in salvarsan we have made a distinct advance in the treatment of this condition. Improvement seldom follows the first injection, but several are necessary. It always relieves the subjective symptoms and usually improves the objective symptoms. The disease in the second eye commonly runs a milder course than that in the first eye affected. I believe that more than 90 per cent. are due to syphilis.

Dr. Reber warned against the slowness with which results are achieved in interstitial keratitis. 20 years ago it was pretty generally conceded that interstitial keratitis was almost invariably of syphilitic origin; but since the advent of the modern laboratory methods we can make more accurate diagnoses. Many more cases of tubercular interstitial keratitis are reported. I have had two in my own practice within the last year. One must also bear in mind the type of interstitial keratitis that is lighted up by a traumatism. This generally occurs in people in whom the syphilitic taint is latent. Salvarsan and neosalvarsan are of less service in interstital keratitis than in almost any other form of ocular inflammation. In interstitial keratitis repeated injections are necessary, sometimes 6, 8, or even 10 being required. It is a nice question whether inunctions will not produce quit: as good results quite as promptly; no matter how prompt and vigorous the treatment, however, the second eye is almost invariably involved.

W. WALTER WATSON, M.D., *Sec'y.*

ABSTRACTS FROM MEDICAL LITERATURE.

BY J. F. SHOEMAKER, M.D.,
ST. LOUIS, MO.

PROPHYLAXIS OF OCULAR BIRTH INFECTIONS AND VENEREAL DISEASE.

Robert Sattler (*Jour. of Ophthalmology and Otolaryngology,* December, 1913) says that the beginner in practical obstetrics must face two unsettled questions, toward the solution of which he may contribute later the results and conclusions of his own experience. First: What proportional share of all ocular birth inflammations can be unquestionably assigned to a gonococcal origin, in private, charity eye and obstetric dispensaries, and in public lying-in hospitals? Second: The probable channel for the ingress of gonococci and other pyogenic cocci or bacteria, and in particular, the time of implantation, whether before or during or whether it follows sooner or later the parturient act of the mother? Whether an infant's eyes, for the known reason that

the eyelids are immobile and firmly closed, even additionally agglutinated by thick amniotic paste, with every absence of reflex muscular movements owing to the still dormant function of the retinas, is thereby safeguarded against infections or other material forcing its entry at this time? At this early period the tears which are considered the natural aseptic and antiseptic agents of the eyes are absent. Certainly their absence, or the fact that they are not secreted until some time after birth, renders the accidental or forced introduction of foreign material more likely to happen, and because of its retention for longer time, more difficult to dissolve or dislodge. It may also explain the greater liability to ocular contamination in general. It accounts also for the longer period of latency before an active inflammatory process is started in some cases. It is not improbable that owing to the absence of tears, pyogenic organisms may more readily migrate or be forced into the eyes through a patulous nasal duct from the nasal cavity, which is a larger and easier receptacle for the longer lodgment of infectious pus during protracted labor.—*N. Y. Med. Jr.*

THE IMPORTANCE OF PRECISE DETERMINATION OF OCULAR FILTRATION.

John T. Carpenter (*Penn. Med. Jour.*, January, 1914), observing that in normal eyes the ocular tension falls as the result of the weight of the tonometer pressing upon the eye, expressing the fluid of the eye through the normal filtration openings, while in glaucomatous eyes no similar fall occurs, due to interference with the normal outflow of fluid, determined to make a series of measurements of the rate of filtration. He divided his cases into four classes: (a) Normal eyes of different refractive conditions, in patients free from all suspicion of glaucoma, grouped according to age, under 30, between 30 and 50, and over 50; (b) patients in whom we might suspect glaucoma, from the family record, from the presence of vague pain and discomfort, from insufficient accommodative power or changes in the refraction of the eye, notably the development of astigmatism against the rule, or from the evidence of glaucoma in one eye, without involvement of the other; (c) patients suffering from glaucoma of any character; (d) patients upon whom one of the various operative procedures had been performed for the relief of glau-

coma. He found that in normal eyes the initial ocular pressure varied between 16 and 24 millimeters, and the rate of filtration showed an appreciable fall within 40 seconds. He gives illustrative cases of the other three groups showing that so long as the filtration was sufficient to allow a fall of the ocular pressure from the weight of the tonometer the cases progressed satisfactorily under treatment with miotics, but when there was no drop in one or two minutes time the progress of the case was not satisfactory. He summarizes as follows:

1. The estimation of the rate and amount of ocular filtration by means of the tonometer should be as much a part of the routine work of the ophthalmologist as is the employment of this instrument for the measurement of ocular tension.

2. A normal average index of filtration presumably exists, but in order to establish its limits, investigation is necessary in a large series of normal eyes.

3. In glaucoma eyes increased tension, as recorded by the tonometer, is invariably associated with lessened or delayed filtration; but a disturbance of drainage may exist, as an important indication of incipient glaucoma, with a tension well within the upper normal limit of 25 millimeters. Delayed or deficient filtration (the most important premonitory symptom of incipient glaucoma) should warn the surgeon, in spite of the absence of characteristic signs of glaucoma, of the probability of a subsequent onset of this disease.

4. Further investigation is urgently needed to determine the effect, upon ocular filtration, of the various operations proposed for the relief of glaucoma. That operation which shall be found to influence filtration most effectually will eventually become the "operation of choice" in this serious disease.

OCULAR VERTIGO.

Aaron Brav (*N. Y. Med. Jour.*, November 15, 1913) tabulates the causes of ocular vertigo as follows: 1. disturbance of motility: (a) Paralysis of the external ocular muscles. (b) Spasm of the external ocular muscles. 2. Refractive astigmatism: (a) Simple. (b) Compound. (c) Mixed. 3. Accommodative: (a) Spasm of the ciliary muscles. (b) Paresis of the ciliary muscles. 4. Disturbed relation between accommodation and convergence. He points out that paralysis of the extrinsic muscles may

cause vertigo in two ways: first, by diplopia, and secondly, by an effort to fix with the paralyzed eye in the direction of the normal action of the paralyzed muscles. Partial paralysis of an ocular muscle may produce vertigo, even when distinct diplopia is not present. Ocular vertigo caused by paralysis of the extrinsic muscles is primarily of constitutional origin since such paralyses are usually caused by some constitutional disease. Vertigo caused by spasm of external ocular muscles is very similar to that caused by paralysis. In fact most cases of spasm are secondary to a paresis, although primary spasm may be found in irritative conditions of the brain, in meningitis, or in reflex action from some dental irritation.

Among the chain of symptoms arising from spasm of accommodation, vertigo is not uncommon, particularly when the spasm is of a clonic nature rather than of a tonic. The confusion and apparent movement of objects caused by the change of refraction resulting from the spasmodic contraction of the ciliary muscles is responsible for the vertigo. Paralysis of the accommodation rarely, if ever, causes vertigo unless there is with it a paresis of one of the branches of the third nerve. Astigmatism is the type of refractive error that most often gives rise to vertigo. It may do so as a result of the accommodative effort of the ciliary muscles or through the efforts of the external ocular muscles. The author says:

"Axiomatically, one may say with sufficient amount of certainty that ocular vertigo, whether due to astigmatism, paralysis of the extrinsic muscles, or accommodative difficulties, is the direct result of the disturbed relation between the ciliary muscles and the external motor muscles of the eye. This disturbed relation gives rise to false projection, improper fixation, interference with orientation, active or latent diplopia, unequal retinal images, difficulties in fusing images, delusion in space, size, depth, and dimension, disturbed equilibrium and an apparent movement of objects in space, and subsequently vertigo."

ANGIOMA OF THE CHORIOID.

Robert Salus (*Zeitschrift für Augenheilkunde*, October, 1913) reports a case of angioma of the chorioid. He believes that the early anatomical condition of this tumor is characterized by the following changes: A high degree of cystoid degeneration of the retina, confined to the region of the tumor, leaving the sur-

rounding parts of the retina nearly or quite normal and capable of function; the limitation of the detachment of the retina to the region of the tumor and its extremely slow increase, although the opposite would be expected from the nature of the growth; the appearance of adhesions between the outer layers of the retina and the subjacent tissue without any signs of inflammation; and the appearance of a more or less thick and dense connective tissue or epithelial layer separating the tumor from the interior of the eye.

THE DIAGNOSTIC AND THERAPEUTIC USES OF TUBERCULIN IN OCULAR DISEASES.

WITH A REVIEW OF SOME OF THE CLAIMS MADE FOR IT.

A. Edward Davis (*Trans. Oph. Sec., A. M. A.,* 1913) discusses this subject at some length, taking up, seriatum, tuberculin reactions, the nature of the reaction, immunity, diagnosis, the therapeutic uses of tuberculin and clinical results. Among the diseases of the eye that are due to tuberculosis and respond favorably to the therapeutic application of tuberculin, he considers conjunctivitis, phlyctenular conjunctivitis, Paranaud's conjunctivitis, scleritis, episcleritis, sclerokeratitis, keratitis, iritis, kerato-iritis, iridocyclitis, cyclitis, chorioiditis, retinitis, optic neuritis, and muscular palsies. The following conclusions are offered:

1. We may safely state that the tuberculin reaction tests play a part as important in arriving at a correct diagnosis in tuberculous diseases as does the Wassermann reaction in syphilitic diseases. Both are of the utmost value often in making a differential diagnosis.

2. As a therapeutic agent, tuberculin, used in the right way, is the most valuable remedy we possess in the treatment of ocular tuberculosis. Used consistently, and persistently over a long course of time, the results accomplished at times are little short of wonderful. But it should be ever kept in mind that we are dealing with a powerful toxin, and with one that is capable of doing much harm if not properly given, and in the right dose. Each patient must, therefore, be individualized and treated according to his or her reaction to the remedy, for we are dealing with a remedy that is not a cure in itself, but acts by stimulating the body cells to manufacture the "antibodies" or protective materials for its own defense against the tubercle bacillus.

NOTICES.

XII INTERNATIONAL CONGRESS OF OPHTHALMOLOGY.

St. Petersburg, August 10 to August 15, 1914.

Office: Ophthalmic Hospital, Mochowaja, 38.

Third Circular. St. Petersburg, January, 1914.

The Centralbureau announces that the Ministry of the Interior has authorized free entrance and an unlimited stay in Russia to *all members of the Congress without exception.*

The Ministry requests members of the Congress to pay attention to the following:

1. On presenting the passport for visé by the Russian Consul residing in the country, owners of the passport are requested to notify, that the reason of their journey is to take part in the Congress.

2. In case the passport has not been vised by the Russian Consul, it is sufficient to present at the frontier, as a proof of bona fides, the card of admission, which will save the holders from any difficulties at the frontier and grant them an unlimited stay in Russia.

In the rules for the Congress, Sec. 2, the 1st of February, 1914, has been fixed as final term for sending off the reports. Thanks to manifold requests, the term has been prolonged till the 1st of April, 1914.

Further the Centralbureau announces, that the group of the East-Chinese Railways, as well as the Russian Government Railways, have consented to grant a reduction in all the three classes between the 28/15 of May and the 14/1 of October, 1914.

The principal Lines of the East-Chinese Railway are: Wladiwostok—Charbin; Charbin—Mandschurei; Charbin—Tschan-Tschun.

The Company of the "Voluntary Fleet" allows a free passage in both directions on all its steamers, from Wladiwostok to Odessa from the 14/1 of June till 28/15 September, 1914, though meals, etc., taken on board will be charged extra.

The cabins on the steamers of this Line are equal to the second-class cabins of the modern mail-steamers.

The "Voluntary Fleet" has its General Office at the Italianskaja, 33, St. Petersburg.

The steamers of the East-Line call at the following ports: Wladiwostok—Nagasaki; Chankou—Shanghai; Hong-Kong—

Singapore; Colombo—Aden; Djibuti—Chodeida; Djedda—Suez: Port-Said—Beirut; Constantinople—Odessa.

In all above-mentioned parts the Voluntary Fleet has its own agencies. Travelling on this route the members of the Congress have to conform to the rules mentioned in the Second Circular.

President of the Centralbureau: Prof. *L. G. Bellarminoff.*
General Secretary: Dr. *Th. Germann.*

We have just received the first number of the *Zentralblatt fuer die gesamte Ophthalmologie und ihre Grenzgebiete,* the new Journal published by Bielschowsky, Elschnig, Hertel, von Hippel, Schieck, Siegrist and Krauss.

It gives short reports on all work done in ophthalmology and on subjects in other branches of science which have some bearing on ophthalmological questions. The latter is its distinctive feature.

The men at the head of this venture and their work are not in need of further praise.

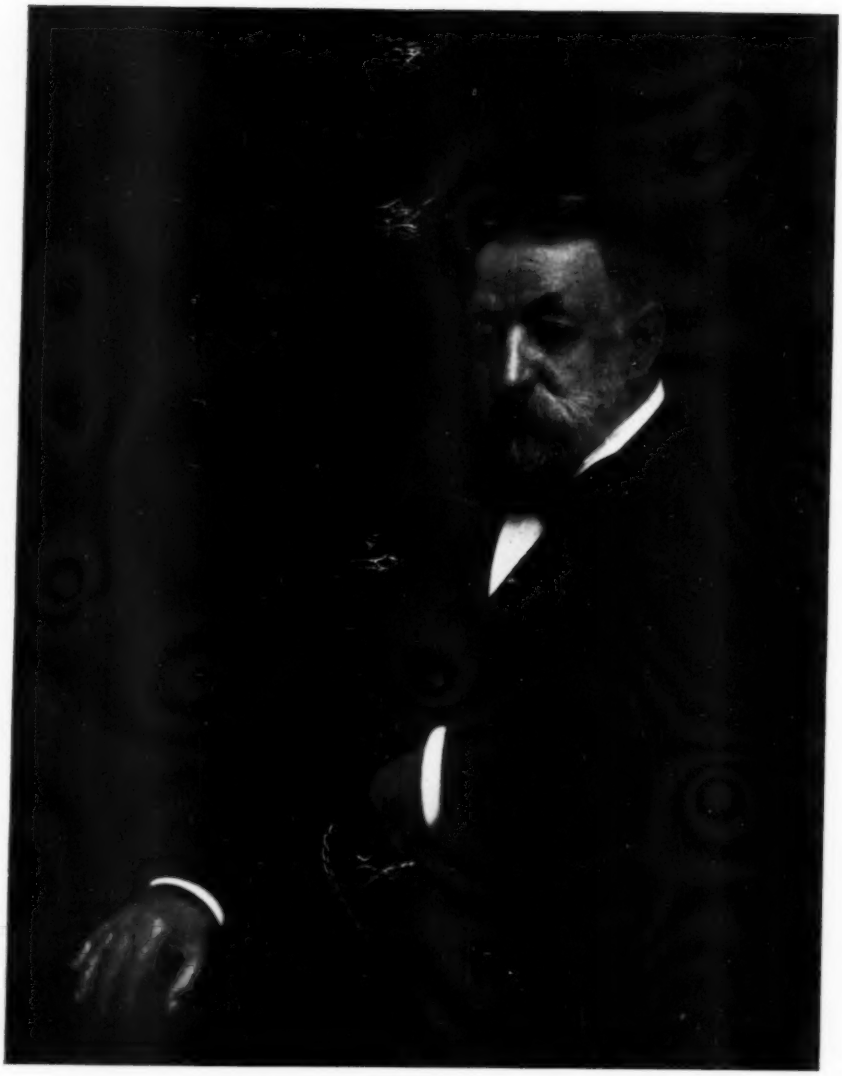
We wish their new Journal all the success which it undoubtedly will deserve.

BOOK REVIEW.

REPORT ON THE OPHTHALMIC SECTION OF THE DEPARTMENT OF PUBLIC HEALTH, 1912, by the Director of the Ophthalmic Hospitals, A. F. McCallan. Cairo, Egypt: Government Press, 1914.

This exhaustive work gives a full insight into the great good which is being done Egypt by the scientific work of Mr. McCallan and his able assistants. Under their care are permanent and travelling ophthalmic hospitals, by means of which a very large number, particularly of those afflicted with trachoma, receive proper treatment. In a country in which this dire disease is as rampant and in which education, and especially hygienic education, is as shining by its absence as in Egypt, the boon conferred by these trained physicians can indeed not be overestimated.

Statistical tables and a number of photographs are added to the text of this report, and increase its value. ALT.



John Green.